

**BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF DELAWARE**

|   |   |                               |
|---|---|-------------------------------|
| <b>IN THE MATTER OF THE APPLICATION OF</b>  | ) |                               |
| <b>SUEZ WATER DELAWARE, INC.</b>            | ) | <b>PSC DOCKET NO. 16-0163</b> |
| <b>FOR A GENERAL INCREASE IN RATES AND</b>  | ) |                               |
| <b>FOR A REVISION OF ITS GENERAL TARIFF</b> | ) |                               |
| <b>(FILED FEBRUARY 5, 2016)</b>             | ) |                               |

**DIRECT TESTIMONY  
OF  
DAVID C. PARCELL  
PRESIDENT  
TECHNICAL ASSOCIATES, INC.**

**ON BEHALF OF  
THE DELAWARE PUBLIC SERVICE COMMISSION STAFF**

**November 18, 2016**

## **TABLE OF CONTENTS**

|   | <b><u>PAGE</u></b> |
|---|--------------------|
| <b>I. INTRODUCTION.....</b>                                   | <b>1</b>           |
| <b>II. RECOMMENDATIONS AND SUMMARY .....</b>                  | <b>2</b>           |
| <b>III. ECONOMIC/LEGAL PRINCIPLES AND METHODOLOGIES .....</b> | <b>3</b>           |
| <b>IV. GENERAL ECONOMIC CONDITIONS .....</b>                  | <b>6</b>           |
| <b>V. SUEZ WATER DELAWARE'S OPERATIONS AND RISKS .....</b>    | <b>13</b>          |
| <b>VI. CAPITAL STRUCTURE AND COST OF DEBT .....</b>           | <b>15</b>          |
| <b>VII. SELECTION OF PROXY GROUP .....</b>                    | <b>18</b>          |
| <b>VIII. DCF ANALYSIS .....</b>                               | <b>19</b>          |
| <b>IX. CAPM ANALYSIS .....</b>                                | <b>22</b>          |
| <b>X. CE ANALYSIS.....</b>                                    | <b>25</b>          |
| <b>XI. RETURN ON EQUITY RECOMMENDATION .....</b>              | <b>29</b>          |
| <b>XII. TOTAL COST OF CAPITAL .....</b>                       | <b>31</b>          |
| <b>XIII. COMMENTS ON COMPANY TESTIMONY .....</b>              | <b>31</b>          |

**I. INTRODUCTION**

**Q. Please state your name, occupation, and business address.**

A. My name is David C. Parcell. I am President and Senior Economist of Technical Associates, Inc. My business address is Suite 130, 1503 Santa Rosa Road, Richmond, Virginia 23229.

**Q. Please summarize your educational background and professional experience.**

A. I hold B.A. (1969) and M.A. (1970) degrees in economics from Virginia Polytechnic Institute and State University (Virginia Tech) and a M.B.A. (1985) from Virginia Commonwealth University. I have been a consulting economist with Technical Associates since 1970. I have provided cost of capital testimony in public utility ratemaking proceedings dating back to 1972 and I have previously filed testimony and/or testified in more than 550 utility proceedings before about 50 regulatory agencies in the United States and Canada. Attachment 1 provides a more complete description of my education and relevant work experience.

**Q. Have you previously testified before this commission?**

A. Yes, I have. Since 1997, I have testified in approximately 25 public utility proceedings before this Commission, most on behalf of the Commission Staff.

**Q. What is the purpose of your testimony in this proceeding?**

A. Technical Associates has been retained by the Commission Staff to address the cost of capital ("COC") issues in the current application of SUEZ Water Delaware Inc. ("SWDE"). I have performed independent analyses and am recommending a cost of common equity ("ROE"), capital structure, and total COC for SWDE. In addition, since

SWDE is a subsidiary of SUEZ Water Resources (“SWR”), and SUEZ Environment (“SUEZ”). I have also evaluated these entities in my analyses.

**Q. Have you prepared an exhibit in support of your testimony?**

A. Yes, I have prepared one exhibit, identified as Schedule 1 through Schedule 14. This exhibit was prepared either by me or under my direction. The information contained in this exhibit is correct to the best of my knowledge and belief.

## II. RECOMMENDATIONS AND SUMMARY

**Q. What are your recommendations in this proceeding?**

A. My overall COC recommendations for SWDE are shown on Schedule 1 and are summarized as follows:

| Item           | Percent | Cost     | Weighted Cost     |
|----------------|---------|----------|-------------------|
| Long-Term Debt | 46.66%  | 5.19%    | 2.42%             |
| Common Equity  | 53.34%  | 9.1-9.5% | 4.85-5.07%        |
| Total          | 100.0%  |          | 7.28-7.49%        |
|                |         |          | (7.38% mid-point) |

SWDE’s application requests a COC of 7.89 percent and a ROE of 10.25 percent.<sup>1</sup>

**Q. Please summarize your analyses and conclusions.**

A. This proceeding is concerned with SWDE’s regulated water utility operations in Delaware. My analyses concern the Company’s COC. The first step in performing these analyses is to develop the appropriate capital structure. SWDE proposes use of the Test Year (December 31, 2015) capital structure of SWR. I also use this capital structure.

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<sup>1</sup> MFR 6.1.1.

The second step in a COC calculation is to determine the embedded cost rate of long-term debt. SWDE proposes to use a cost rate of 5.19 percent for long-term debt, reflecting the Test Year cost of long-term debt of SWR. I also use this cost rate.

The third step in the COC calculation is to estimate the ROE. I employ three recognized methodologies to estimate SWDE's ROE, each of which I apply to a proxy group of water utilities. These three methodologies and my findings are:

| Methodology                          | Range     | Recommendation |
|--------------------------------------|-----------|----------------|
| Discounted Cash Flow ("DCF")         | 8.6-9.1%  | 9.1%           |
| Capital Asset Pricing Model ("CAPM") | 5.9-6.1%  | 6.0%           |
| Comparable Earnings ("CE")           | 9.0-10.0% | 9.5%           |

Based upon these findings, I conclude that SWDE's ROE is within a range of 9.1 percent to 9.5 percent, which is based upon my DCF and CE models.<sup>2</sup>

Combining these three steps into the weighted COC results in an overall rate of return of 7.28 percent to 7.49 percent (which incorporates a 9.1 percent to 9.5 percent ROE). I recommend a 7.38 percent COC, which incorporates a 9.3 percent ROE.

### III. ECONOMIC/LEGAL PRINCIPLES AND METHODOLOGIES

**Q. What are the primary economic and legal principles that establish the standards for determining a fair rate of return for a regulated utility?**

**A.** Public utility rates are normally established in a manner designed to allow the recovery of their costs, including capital costs. This is frequently referred to as "cost of service"

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<sup>2</sup> As I indicate in a later section, my ROE recommendation does not directly incorporate the CAPM results, which I believe to be somewhat low at this time, relative to the DCF and CE results.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1       ratemaking. Rates for regulated public utilities traditionally have been primarily  
2       established using the “rate base – rate of return” concept. Under this method, utilities are  
3       allowed to recover a level of operating expenses, taxes, and depreciation deemed  
4       reasonable for rate-setting purposes, and are granted an opportunity to earn a fair rate of  
5       return on the assets utilized (i.e., rate base) in providing service to their customers.

6             The rate base is derived from the asset side of the utility’s balance sheet as a  
7       dollar amount and the rate of return is developed from the liabilities/owners’ equity side  
8       of the balance sheet as a percentage. Thus, the revenue impact of the COC is derived by  
9       multiplying the rate base by the rate of return, including income taxes.

10            The rate of return is developed from the COC, which is estimated by weighting  
11       the capital structure components (i.e., debt, preferred stock, and common equity) by their  
12       percentages in the capital structure and multiplying these values by their cost rates. This  
13       is also known as the weighted COC.

14            Technically, “fair rate of return” is a legal and accounting concept that refers to an  
15       ex post (after the fact) earned return on an asset base, while the COC is an economic and  
16       financial concept which refers to an ex ante (before the fact) expected, or required, return  
17       on a capital base. In regulatory proceedings, however, the two terms are often used  
18       interchangeably, and I have equated the two concepts in my testimony.

19            From an economic standpoint, a fair rate of return is normally interpreted to mean  
20       that an efficient and economically managed utility will be able to maintain its financial  
21       integrity, attract capital, and establish comparable returns for similar risk investments.  
22       These concepts are derived from economic and financial theory and are generally  
23       implemented using financial models and economic concepts.

24            Although I am not a lawyer and I do not offer a legal opinion, my testimony is  
25       based on my understanding that two United States Supreme Court decisions provide the  
26       controlling standards for a fair rate of return. The first decision is *Bluefield Water Works*

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1           *and Improvement Co. v. Public Serv. Comm'n of West Virginia*, 262 U.S. 679 (1923). In  
2           this decision, the Court stated:

3  
4           The annual rate that will constitute just compensation depends upon many  
5           circumstances and must be determined by the exercise of fair and  
6           enlightened judgment, having regard to all relevant facts. A public utility  
7           is entitled to such rates as will permit it to earn a return on the value of the  
8           property which it employs for the convenience of the public equal to that  
9           generally being made at the same time and in the same general part of the  
10          country on investments in other business undertakings which are attended  
11          by corresponding risks and uncertainties; but it has no constitutional right  
12          to profits such as are realized or anticipated in highly profitable enterprises  
13          or speculative ventures. The return should be reasonably sufficient to  
14          assure confidence in the financial soundness of the utility, and should be  
15          adequate, under efficient and economical management, to maintain and  
16          support its credit and enable it to raise the money necessary for the proper  
17          discharge of its public duties. A rate of return may be reasonable at one  
18          time, and become too high or too low by changes affecting opportunities  
19          for investment, the money market, and business conditions generally.  
20

21           It is generally understood that the *Bluefield* decision established the following  
22           standards for a fair rate of return: comparable earnings, financial integrity, and capital  
23           attraction. It also noted that required returns change over time, and there is an underlying  
24           assumption that the utility be operated efficiently.

25           The second decision is *Federal Power Comm'n v. Hope Natural Gas Co.*, 320  
26           U.S. 591 (1942). In that decision, the Court stated:

27           The rate-making process under the [Natural Gas] Act, i.e., the fixing of  
28           ‘just and reasonable’ rates, involves a balancing of the investor and  
29           consumer interests. . . . From the investor or company point of view it is  
30           important that there be enough revenue not only for operating expenses  
31           but also for the capital costs of the business. These include service on the  
32           debt and dividends on the stock. By this standard the return to the equity  
33           owner should be commensurate with returns on investments in other  
34           enterprises having corresponding risks. That return, moreover, should be  
35           sufficient to assure confidence in the financial integrity of the enterprise,  
36           so as to maintain its credit and to attract capital.

1           The three economic and financial parameters in the *Bluefield* and *Hope* decisions  
2           – comparable earnings, financial integrity, and capital attraction – reflect the economic  
3           criteria encompassed in the “opportunity cost” principle of economics. The opportunity  
4           cost principle provides that a utility and its investors should be afforded an opportunity  
5           (not a guarantee) to earn a return commensurate with returns they could expect to achieve  
6           on investments of similar risk. The opportunity cost principle is consistent with the  
7           fundamental premise on which regulation rests, namely, that it is intended to act as a  
8           surrogate for competition.

9  
10   **Q.   How can the *Bluefield* and *Hope* parameters be employed to estimate the COC for a**  
11   **utility?**

12   A.   Neither the courts nor economic/financial theory has developed exact and mechanical  
13   procedures for precisely determining the COC. This is the case because the COC is an  
14   opportunity cost and is prospective-looking, which dictates that it must be estimated.  
15   However, there are several useful models that can be employed to assist in estimating the  
16   ROE, which is the capital structure item that is the most difficult to determine. These  
17   include the DCF, CAPM, CE and risk premium (“RP”) methods. I have not directly  
18   employed a RP model in my analyses although, as discussed later, my CAPM analysis is  
19   a form of the RP methodology. Each of these methodologies will be described in more  
20   detail later in my testimony.

21  
22                   **IV.   GENERAL ECONOMIC CONDITIONS**

23  
24   **Q.   Are economic and financial conditions important in determining the costs of capital**  
25   **for a public utility?**

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 A. Yes. The costs of capital, for both fixed-cost (debt and preferred stock) components and  
2 common equity, are determined in part by current and prospective economic and  
3 financial conditions. At any given time, each of the following factors has an influence on  
4 the costs of capital:

- 5 • The level of economic activity (i.e., growth rate of the economy);
- 6 • The stage of the business cycle (i.e., recession, expansion, or transition);
- 7 • The level of inflation;
- 8 • The level and trend of interest rates; and,
- 9 • Current and expected economic conditions.

10 My understanding is that this position is consistent with the *Bluefield* decision that  
11 noted “[a] rate of return may be reasonable at one time and become too high or too low  
12 by changes affecting opportunities for investment, the money market, and business  
13 conditions generally.” *Bluefield*, 262 U.S. at 693.

14  
15 **Q. What indicators of economic and financial activity did you evaluate in your**  
16 **analyses?**

17 A. I examined several sets of economic statistics from 1975 to the present. I chose this time  
18 period because it permits the evaluation of economic conditions over four full business  
19 cycles plus the current cycle, allowing for an assessment of changes in long-term trends.  
20 Consideration of economic/financial conditions over a relatively long period of time  
21 allows me to assess how such conditions have had impacts on the level and trends of the  
22 costs of capital. This period also approximates the beginning and continuation of active  
23 rate case activities by public utilities, which generally began in the mid-1970s.

24 A business cycle is commonly defined as a complete period of expansion  
25 (recovery and growth) and contraction (recession). A full business cycle is a useful and  
26 convenient period over which to measure levels and trends in long-term capital costs

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 because it incorporates the cyclical (i.e., stage of business cycle) influences and, thus,  
2 permits a comparison of structural (or long-term) trends.

3  
4 **Q. Please describe the timeframes of the four prior business cycles and the current**  
5 **cycle.**

6 A. The four prior complete cycles and current cycle cover the following periods:  
7

| <u>Business Cycle</u> | <u>Expansion Cycle</u> | <u>Contraction Period</u> |
|-----------------------|------------------------|---------------------------|
| 1975-1982             | Mar. 1975-July 1981    | Aug. 1981-Oct. 1982       |
| 1982-1991             | Nov. 1982-July 1990    | Aug. 1990-Mar. 1991       |
| 1991-2001             | Mar. 1991-Mar. 2001    | Apr. 2001-Nov. 2001       |
| 2001-2009             | Nov. 2001-Nov. 2007    | Dec. 2007-June 2009       |
| Current               | July 2009-             |                           |

Source: National Bureau of Economic Research, "Business Cycle  
Expansions and Contractions."<sup>3</sup>

8  
9 **Q. Do you have any general observations concerning the recent trends in economic**  
10 **conditions and their impact on capital costs over this broad period?**

11 A. Yes, I do. From the early 1980s until the end of 2007, the United States economy had  
12 enjoyed general prosperity and stability. This period had been characterized by longer  
13 economic expansions, relatively tame contractions, low and declining inflation, and  
14 declining interest rates and other capital costs.

15 However, in 2008 and 2009 the economy declined significantly, initially as a  
16 result of the 2007 collapse of the "sub-prime" mortgage market and the related liquidity  
17 crisis in the financial sector of the economy. Subsequently, this financial crisis  
18 intensified with a more broad-based decline, initially based on a substantial increase in  
19 petroleum prices and a dramatic decline in the U.S. financial sector, culminating with the  
20 collapse and/or bailouts of a significant number of well-known institutions such as Bear  
21 Stearns, Lehman Brothers, Merrill Lynch, Freddie Mac, Fannie Mae, AIG and Wachovia.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 The recession also witnessed the demise of national companies such as Circuit City and  
2 the bankruptcies of automotive manufacturers such as Chrysler and General Motors.

3 This decline has been described as the worst financial crisis since the Great  
4 Depression and has been referred to as the “Great Recession.” Beginning in 2008, the  
5 U.S. and other governments implemented unprecedented actions to attempt to correct or  
6 minimize the scope and effects of this recession.

7 The recession reached its low point in mid-2009, when the economy began to  
8 expand again, although at a slow and uneven rate. However, the length and severity of  
9 the recession, as well as a relatively slow and uneven recovery, indicate that the impacts  
10 of the recession have been and will be felt for an extended period of time.

11  
12 **Q. Please describe recent and current economic and financial conditions and their**  
13 **impact on the cost of capital.**

14 A. One impact of the Great Recession has been a reduction in actual and expected  
15 investment returns and a corresponding reduction in the costs of capital. This decline is  
16 evidenced by a decline in both short-term and long-term interest rates and the  
17 expectations of investors and is reflected in ROE model results (such as DCF, CAPM and  
18 CE). Regulatory agencies throughout the U.S. have recognized the decline in capital  
19 costs by authorizing lower ROEs for regulated utilities in each of the last several years.

20 Schedule 2 shows several sets of relevant economic and financial statistics for the  
21 cited time periods. Pages 1 and 2 contain general macroeconomic statistics; pages 3 and  
22 4 show interest rates; and pages 5 and 6 contain equity market statistics.

23 Pages 1 and 2 show that in 2007 the economy subsequently entered a significant  
24 decline, as indicated by the lower growth rate in real (i.e., adjusted for inflation) Gross  
25 Domestic Product (“GDP”), lower levels of industrial production, and an increase in the  
26 unemployment rate. This recession lasted until mid-2009, making it a longer-than-

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<sup>3</sup> <http://www.nber.org/cycles/cyclesmain.html>.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 normal recession, as well as a much deeper recession. Since then, economic growth has  
2 been somewhat erratic and the economy has grown slower than the prior expansions.

3 Pages 1 and 2 also show the rate of inflation. As reflected in the Consumer Price  
4 Index (“CPI”) inflation rose significantly during the 1975-1982 business cycle and  
5 reached double-digit levels in 1979-1980. The rate of inflation has declined substantially  
6 since 1981. Since 2008, the CPI has been 3 percent or lower, with 2013 being only 1.5  
7 percent and both 2014 and 2015 being below 1 percent. It is thus apparent that the rate of  
8 inflation has dramatically declined over the past several business cycles. Recent and  
9 current levels of inflation are at the lowest levels of the past 35 years, which is reflective  
10 of lower capital costs.<sup>4</sup>

11  
12 **Q. What have been the trends in interest rates over the four prior business cycles and**  
13 **at the current time?**

14 A. Pages 3 and 4 of Schedule 2 show several series of interest rates. Both short-term and  
15 long-term rates rose sharply to record levels in 1975-1981 when the inflation rate was  
16 high. Interest rates declined substantially in conjunction with the corresponding declines  
17 in inflation since the early 1980’s.

18 From 2008 to late 2015, the Federal Reserve System (“Federal Reserve”)  
19 maintained the Federal Funds rate (i.e., short-term interest rate) at 0.25 percent, an all-  
20 time low. The Federal Reserve raised it slightly to 0.50 percent in December of 2015, but  
21 contrary to some expectations, has not raised it further in the first several months of 2016.  
22 The Federal Reserve also purchased U.S. Treasury securities to stimulate the economy.<sup>5</sup>

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<sup>4</sup> The rate of inflation is one component of interest rate expectations of investors, who generally expect to receive a return in excess of the rate of inflation. Thus, a lower rate of inflation has a downward impact on interest rates and other capital costs.

<sup>5</sup> This is referred to as Quantitative Easing which was comprised of three “rounds”. In “round” 3, known as QE3, the Federal Reserve initially purchased some \$85 billion of U.S. Treasury Securities per month in order to stimulate the economy. The Federal Reserve eventually “tapered” its purchase of U.S. Treasury securities through October 2014, at which time Quantitative Easing ended.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 As seen on page 4, in 2012, both U.S. and corporate bond yields declined to their lowest  
2 levels in the past four business cycles and in more than 35 years. Even with the  
3 “tapering” and eventual ending of the Federal Reserve’s Quantitative Easing program,  
4 interest rates have remained low. Currently, both government and corporate lending rates  
5 remain at historically low levels, again reflective of lower capital costs.  
6

7 **Q. What does this schedule show for trends of common share prices?**

8 A. Pages 5 and 6 show several series of common stock prices and ratios. These indicate that  
9 stock prices were essentially stagnant during the high inflation/high interest rate  
10 environment of the late 1970s and early 1980s. The 1983-1991 business cycle and the  
11 more recent cycles witnessed a significant upward trend in stock prices. The beginning  
12 of the recent financial crisis saw stock prices decline precipitously, as stock prices in  
13 2008 and early 2009 were down significantly from peak 2007 levels, reflecting the  
14 financial/economic crisis. Beginning in the second quarter of 2009, prices recovered  
15 substantially and ultimately reached and exceeded the levels achieved prior to the  
16 “crash.” On the other hand, recent equity markets have been somewhat volatile.  
17

18 **Q. What conclusions do you draw from your discussion of economic and financial**  
19 **conditions?**

20 A. Recent economic and financial circumstances have differed from any that have prevailed  
21 since at least the 1930s. The late 2008-early 2009 deterioration in stock prices, the  
22 decline in U.S. Treasury bond yields, and an increase in corporate bond yields were  
23 factors in the then-evident “flight to safety.” Concurrently, there was a decline in capital  
24 costs and returns, which significantly reduced the value of most retirement accounts,  
25 investment portfolios and other assets. One significant aspect of this has been a decline

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 in investor expectations of returns,<sup>6</sup> even with the return of stock prices to levels achieved  
2 prior to the “crash.” This is evident in several ways: 1) lower interest rates on bank  
3 deposits; 2) lower interest rates on U.S. Treasury and corporate bonds; 3), lower increases  
4 in social security cost of living benefits;<sup>7</sup> and 4) lower authorized ROEs by regulatory  
5 commissions. Finally, as noted above, utility bond interest rates are currently at levels  
6 below those prevailing prior to the financial crisis of late 2008 to early 2009 and are near  
7 the lowest levels of the past 35 years. It is also noteworthy that long-term interest rates  
8 have declined in 2016, in spite of the Federal Reserve’s raising of short-term rates in  
9 December of 2015.

10  
11 **Q. How do these economic/financial conditions impact the determination of a ROE for**  
12 **regulated utilities?**

13 A. The costs of capital for regulated utilities have declined in recent years. For example, the  
14 current interest costs that utilities pay on new debt remain near the low point of the last  
15 several decades. In addition, the results of the traditional ROE models (i.e., DCF, CAPM  
16 and CE) are lower than was the case prior to the Great Recession. In light of this, it is not  
17 surprising that the average ROE authorized by state regulatory agencies have declined  
18 and continue to decline through 2015 and the first three quarters of 2016, as follows:

19  
20  
21  
22  

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<sup>6</sup> See, for example, Kiplinger’s Personal Finance, “Investors Brace for Smaller Gains, Focus on Long-Term,”  
August 30, 2015.

<sup>7</sup> The 2015 increase in Social Security benefits was 1.70 percent – near an all-time. There is no increase in  
2016 Social Security benefits.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

| <u>Year</u> | <u>Electric<sup>8</sup></u> | <u>Natural Gas</u> |
|-------------|-----------------------------|--------------------|
| 2012        | 10.01%                      | 9.94%              |
| 2013        | 9.94%                       | 9.68%              |
| 2014        | 9.76%                       | 9.78%              |
| 2015        | 9.58%                       | 9.60%              |
| 2016 (3Q)   | 9.64%                       | 9.45%              |

**V. SUEZ WATER DELAWARE'S OPERATIONS AND RISKS**

**Q. Please describe SWDC.**

A. SWDC, the Applicant in this proceeding, serves approximately 110,000 people in New Castle County, Delaware. SWDE was previously named United Water Company Delaware and before that was Wilmington Suburban Water Co. (prior to its 1994 merger with United Waterworks).

SWDE was, until June 30 of 2015, a wholly-owned subsidiary of United Waterworks ("UWW"). SWDE is now directly owned by SWR (formerly UWW), which is ultimately owned by SUEZ Environment (SUEZ – a French Corporation).

On November 17, 2015, Suez "rebranded" its U.S. operations. As part of this, United Water, Degremont, and SENA Waste Services were unified under a new, single SUEZ brand that now includes 50 companies in 70 countries. UWW is now known as SWR.

**Q. Please describe SWR.**

A. SWR is a holding company whose principal subsidiaries are 20 regulated water companies and their subsidiaries that provide water and wastewater services to over 7 million people in 24 states throughout the U.S., including Delaware. It also operates 240 municipal systems through public-private partnerships and contract agreements.

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<sup>8</sup> Average ROE values for electric utilities exclude Virginia surcharge/rider generation cases that incorporate plan-specific ROE premiums. See Regulatory Research Associates, Regulatory Focus, July 15, 2016, page 1.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

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**Q. How is SWDE financed?**

A. All of SWDE’s capital is now provided by SWR.

**Q. Is it feasible to directly assess the perceived risk of SWDE relative to other water utilities?**

A. No. SWDE does not have rated debt, so it is not possible to compare its debt ratings with other water utilities. In addition, neither SWDE’s nor SWR’s stock are publicly traded and are not followed by Value Line, so it is not possible to compare SWDE’s beta, safety, or financial strength with other water utilities.

**Q. Are the credit ratings of SWR, and thus SWDE, determined independently of SUEZ?**

A. No. The ratings of SWR (and SWDE) are impacted by SUEZ. This is demonstrated by the following statements by Standard & Poor’s in a July 15, 2016 Research Update titled “SUEZ Water Resources Inc. ‘A-’ Rating Affirmed, Stable Outlook; Competitive Position Assessment Revised to excellent”<sup>9</sup>

Rationale

Our revised assessment of SWR’s competitive position reflects an improvement in the profitability score to excellent from satisfactory. This is primarily the result of the company’s increased focus on more stable regulated operations. We base our stand-alone credit profile on SWR’s excellent business risk profile and its intermediate financial risk profile. Due to less volatility in profitability the competitive advantage of SWR improved to excellent from strong. We continue to assess the business risk profile as excellent. Our ratings on SWR are based on the credit profile of its ultimate parent, Suez Environment S.A. (SEV).

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<sup>9</sup> Provided as Attachment DPA-3.2(B).

1  
2 We view SWR's business risk profile as excellent, reflecting its lower-risk  
3 rate-regulated operations that distribute water to approximately 2.1 million  
4 customers in Delaware, Idaho, New Jersey, New York, Pennsylvania, and  
5 Rhode Island. We view SWR's management of regulatory risk as above  
6 average, partially reflecting the extensive use of riders including  
7 distribution system improvement charges in New Jersey, Pennsylvania,  
8 and Delaware, as well as a decoupling mechanism in New York.  
9

10 **Q. Ms. Ahern claims (pages 46-49 of her prepared testimony) that SWDE'S relatively**  
11 **small size increases its risk. Do you agree?**

12 A. No, I do not. SWDE does not raise its own capital, rather, all of its capital is raised by  
13 SWR, and ultimately SUEZ. As I explain in detail below, it is the size of SWR on a  
14 consolidated basis (and in fact SUEZ) which is evaluated by investors in assessing any  
15 size-related risk.  
16

17 **VI. CAPITAL STRUCTURE AND COST OF DEBT**  
18

19 **Q. What is the importance of determining a proper capital structure in a regulatory**  
20 **framework?**

21 A. A utility's capital structure is important because the concept of rate base – rate of return  
22 regulation requires the capital structure to be utilized in estimating the total COC. Within  
23 this framework, it is proper to ascertain whether the utility's capital structure is  
24 appropriate relative to its level of business risk and relative to other utilities.

25 As discussed in Section III of my testimony, the purpose of determining the  
26 proper capital structure for a utility is to ascertain its capital costs. The rate base – rate of  
27 return concept recognizes the assets employed in providing utility services and provides  
28 for a return on these assets by identifying the liabilities and common equity (and their  
29 cost rates) used to finance the assets. In this process, the rate base is derived from the  
30 asset side of the balance sheet and the COC is derived from the liabilities/owners' equity

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

side of the balance sheet. The inherent assumption in this procedure is that the dollar values of the capital structure and the rate base are approximately equal and the former is utilized to finance the latter.

The common equity ratio (i.e. the percentage of common equity in the capital structure) is the capital structure item which normally receives the most attention. This is the case because common equity: (1) usually commands the highest cost rate; (2) generates associated income tax liabilities; and (3) causes the most controversy since its cost cannot be precisely determined.

**Q. What are the historic capital structure ratios of SWDE and SWR?**

A. As noted previously, all of SWDE's capital is now provided by SWR. Schedule 3 shows the recent capital structure of SWR. SWR's common equity ratios<sup>10</sup> have been:

|           | <u>Including S-T Debt</u> | <u>Excluding S-T Debt</u> |
|-----------|---------------------------|---------------------------|
| 2011      | 52.3%                     | 54.1%                     |
| 2012      | 53.2%                     | 53.4%                     |
| 2013      | 54.3%                     | 54.3%                     |
| 2014      | 55.3%                     | 55.3%                     |
| 2015      | 53.4%                     | 53.4%                     |
| 6/30/2016 | 52.9%                     | 54.4%                     |

**Q. How do these capital structures compare to those of investor-owned water utilities?**

A. Schedule 4 shows the common equity ratios (including short-term debt in capitalization) for the group of proxy water utilities identified in a following section of my testimony. These are:

---

<sup>10</sup> Common equity ratios of United Waterworks, prior to corporate reorganization.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

|             | Value Line<br>Water Group |
|-------------|---------------------------|
| 2011        | 47.3%                     |
| 2012        | 48.9%                     |
| 2013        | 51.9%                     |
| 2014        | 52.4%                     |
| 2015        | 52.4%                     |
| 5-Year Avg. | 50.6%                     |

These common equity ratios are less than SWR's ratios.

**Q. Have you also conducted analyses of the historic and projected common equity ratios of your water proxy group?**

A. Yes, I have. Schedule 5 shows the five-year historic (2011-2015) and estimated 2019-21 common equity ratios (excluding short-term debt) for my water utility proxy group. The summary results are as follows:

| Proxy Group | Five-Year Historic |        | 2019-21 Estimated |        |
|-------------|--------------------|--------|-------------------|--------|
|             | Average            | Median | Average           | Median |
|             | 52.6%              | 52.6%  | 51.4%             | 51.0%  |

These results indicate a common equity ratio of between 51 percent and 53 percent. These are slightly lower than the equity ratios of SWR.

**Q. What capital structure ratio has SWDE requested in this proceeding?**

A. SWDE requests use of the consolidated SWR capital structure as of December 31, 2015:

| Capital Item   | Percent |
|----------------|---------|
| Long-Term Debt | 46.66%  |
| Common Equity  | 53.34%  |

1  
2 **Q. What capital structure do you propose to use in this proceeding?**

3 A. I have used SWDE's proposed capital structure.  
4

5 **Q. Does your proposed capital structure include short-term debt?**

6 A. No, it does not. I normally prefer to include short-term debt in capitalization for cost of  
7 capital estimation. However, as Schedule 3 indicates, SWR has not generally employed  
8 short-term debt in recent years.  
9

10 **Q. What is the cost rate of debt in the company's application?**

11 A. SWDE's filing requests a cost of long term debt of 5.19 percent, which is SWR's actual  
12 cost rate at December 31, 2015. I also use this rate in my cost of capital analyses.  
13

14 **Q. Can the ROE be determined with the same degree of precision as the cost of debt?**

15 A. No. The cost rates of debt are largely determined by interest payments, issue prices, and  
16 related expenses. The ROE, on the other hand, cannot be precisely quantified, primarily  
17 because this cost is an opportunity cost. As mentioned previously, there are several  
18 models that can be employed to estimate the ROE. Three of the primary methods – DCF,  
19 CAPM, and CE – are developed in the following sections of my testimony.  
20

21 **VII. SELECTION OF PROXY GROUP**  
22

23 **Q. How have you estimated the ROE for SWDE?**

24 A. SWDE is not a publicly-traded company. Its immediate parent company (SWR) is also  
25 not publicly-traded. Consequently, it is not possible to directly apply ROE models to  
26 either SWDE or SWR. However, in COC analyses, it is customary to analyze groups of  
27 comparison, or "proxy," companies as a substitute for SWDE to determine its ROE.

I have accordingly selected such a group for comparison to SWDE. This proxy group is selected from the group of nine water utilities included in Value Line Investment Survey and using the criteria listed on Schedule 6. This is very similar to the proxy group employed by SWDE witness Ahern in her ROE analyses, although she does not include Artesian Resources in her proxy group, as I do.

## **VIII. DCF ANALYSIS**

**Q. What is the theory and methodological basis of the DCF model?**

A. The DCF model is one of the oldest and most commonly-used models for estimating the ROE for public utilities. It is my understanding that the DCF methodology is most preferred by the Commission in determining the cost of equity for regulated utilities.

The DCF model is based on the “dividend discount model” of financial theory, which maintains that the value (price) of any security or commodity is the discounted present value of all future cash flows. The most common variant of the DCF model assumes that dividends are expected to grow at a constant rate (the “constant growth” or “Gordon DCF model”). In this framework, the ROE is derived from the following formula:

$$K = \frac{D}{P} + g$$

where: P = current price

D = current dividend rate

K = discount rate (cost of capital)

g = constant rate of expected growth

This formula essentially recognizes that the return expected or required by investors is comprised of two factors: the dividend yield (current income) and expected growth in dividends (future income).

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 **Q. Please explain how you employ the DCF model.**

2 A. I use the constant growth DCF model. In doing so, I combine the current dividend yield  
3 for each of the proxy water utility stocks described in the previous section with several  
4 indicators of expected dividend growth.  
5

6 **Q. How did you derive the dividend yield component of the DCF equation?**

7 A. Several methods can be used to calculate the dividend yield component. These methods  
8 generally differ in the manner in which the dividend rate is employed (i.e., current versus  
9 future dividends or annual versus quarterly compounding variant). I use a quarterly  
10 version of the dividend yield, which is expressed as follows:

$$Yield = \frac{D_0(1 + 0.5g)}{P_0}$$

11  
12 This dividend yield component recognizes the timing of dividend payments and dividend  
13 increases.

14 The  $P_0$  in my yield calculation is the average of the high and low stock price for  
15 each proxy company for the most recent three month period (August-October 2016). The  
16  $D_0$  is the current annualized dividend rate for each proxy company.  
17

18 **Q. How do you estimate the dividend growth component of the DCF equation?**

19 A. The DCF model's dividend growth rate component is usually the most crucial and  
20 controversial element involved in using this methodology. The objective of estimating  
21 the dividend growth component is to reflect the growth expected by investors that is  
22 embodied in the price (and yield) of a company's stock. As such, it is important to  
23 recognize that individual investors have different expectations and consider alternative  
24 indicators in deriving their expectations. This is evidenced by the fact that every  
25 investment decision resulting in the purchase of a particular stock is matched by another  
26 investment decision to sell that stock.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1           A wide array of indicators exists for estimating investors' growth expectations.  
2           As a result, it is evident that investors do not always use one single indicator of growth.  
3           It therefore is necessary to consider alternative dividend growth indicators in deriving the  
4           growth component of the DCF model. I have considered five indicators of growth in my  
5           DCF analyses. These are:

- 6           1.     Years 2011-2015 (5-year average) earnings retention, or fundamental  
7                   growth (per Value Line);
- 8           2.     Five-year average of historic growth in earnings per share (EPS),  
9                   dividends per share (DPS), and book value per share (BVPS)(per Value  
10                  Line);
- 11          3.     Years 2016, 2017, and 2019-2021 projections of earnings retention growth  
12                  (per Value Line);
- 13          4.     Years 2013-2015 to 2019-2021 projections of EPS, DPS, and BVPS (per  
14                  Value Line); and,
- 15          5.     Five-year projections of EPS growth (per First Call).

16        I believe this combination of growth indicators is a representative and appropriate set  
17        with which to begin the process of estimating investor expectations of dividend growth  
18        for the group of proxy companies. I also believe that these growth indicators reflect the  
19        types of information that investors consider in making their investment decisions. As I  
20        indicated previously, investors have an array of information available to them, all of  
21        which would be expected to have some impact on their decision-making process.  
22

23   **Q.     Please describe your DCF calculations.**

24    A.     Schedule 7 presents my DCF analysis. Page 1 shows the calculation of the "raw" (i.e.  
25           prior to adjustment for growth) dividend yield for each proxy company. Pages 2 and 3  
26           show the individual growth rates for the group of proxy companies. Page 4 shows the

DCF calculations, which are presented on several bases: mean, median, and high values. These results can be summarized as follows:

|                        | <u>Mean</u> | <u>Median</u> | <u>Mean<br/>High<sup>11</sup></u> | <u>Median<br/>High<sup>8</sup></u> |
|------------------------|-------------|---------------|-----------------------------------|------------------------------------|
| Value Line Water Group | 7.5%        | 7.5%          | 8.6%                              | 9.1%                               |

I note that the individual DCF calculations shown on Schedule 7 should not be interpreted to reflect the expected cost of capital for individual companies in the proxy groups; rather, the individual values shown should be interpreted as alternative information considered by investors.

**Q. What do you conclude from your DCF analyses?**

A. The DCF rates resulting from the analysis of the proxy group falls into a wide range between 7.5 percent and 9.1 percent. The highest DCF rates are 8.6 percent to 9.1 percent (8.85 percent mid-point). I believe a 9.1 percent represents the current DCF-derived ROE for the proxy group. I recommend a cost of equity of 9.1 percent for SWDE, which focuses on the upper portion of the DCF range. I focus on the higher DCF results since recent financial conditions have had the effect of driving many of the DCF results to low levels relative to those of recent years. As such, my recommendation can be viewed as conservative.

**IX. CAPM ANALYSIS**

**Q. Please describe the theory and methodological basis of the CAPM.**

A. CAPM was developed in the 1960s and 1970s as an extension of modern portfolio theory (MPT), which studies the relationships among risk, diversification, and expected returns.

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<sup>11</sup> Using only the highest growth rate.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 The CAPM describes and measures the relationship between a security's investment risk  
2 and its market rate of return.

3  
4 **Q. How is the CAPM derived?**

5 A. The general form of the CAPM is:

$$K = R_f + \beta(R_m - R_f)$$

6  
7 where: K = cost of equity  
8 R<sub>f</sub> = risk free rate  
9 R<sub>m</sub> = return on market  
10 β = beta  
11 R<sub>m</sub>-R<sub>f</sub> = market risk premium  
12

13 The CAPM is a variant of the RP method. I believe the CAPM is generally superior to  
14 the simple RP method because the CAPM specifically recognizes the risk of a particular  
15 company or industry (i.e., beta), whereas the simple RP method assumes the same ROE  
16 for all companies exhibiting similar bond ratings or other characteristics.

17  
18 **Q. What do you use for the risk-free rate?**

19 A. The first input of the CAPM is the risk-free rate (R<sub>f</sub>). The risk-free rate reflects the level  
20 of return that can be achieved without accepting any risk.

21 In CAPM applications, the risk-free rate is generally recognized by use of U.S.  
22 Treasury securities. Two general types of U.S. Treasury securities are often utilized as  
23 the R<sub>f</sub> component, short-term U.S. Treasury bills and long-term U.S. Treasury bonds.

24 I have performed CAPM calculations using the three-month average yield  
25 (August-October 2016) for 20-year U.S. Treasury bonds. I use the yields on long-term  
26 Treasury bonds since this matches the long-term perspective of ROE analyses. Over this  
27 three month period, these bonds had an average yield of 2.03 percent.

1  
2 **Q. What is beta and what betas do you employ in your CAPM?**

3 A. Beta is a measure of the relative volatility (and thus risk) of a particular stock in relation  
4 to the overall market. Betas less than 1.0 are considered less risky than the market,  
5 whereas betas greater than 1.0 are more risky. Utility stocks traditionally have had betas  
6 below 1.0. I utilize the most recent Value Line betas for each company in my proxy  
7 group.  
8

9 **Q. How do you estimate the market risk premium component?**

10 A. The market risk premium component ( $R_m - R_f$ ) represents the investor-expected premium  
11 of common stocks over the risk-free rate, or long-term government bonds. For the  
12 purpose of estimating the market risk premium, I considered alternative measures of  
13 returns of the S&P 500 (a broad-based group of large U.S. companies) and 20-year U.S.  
14 Treasury bonds (i.e., same timeframe as sources used to develop risk premiums).

15 First, I compared the actual annual ROEs of the S&P 500 with the actual annual  
16 yields of U.S. Treasury bonds. Schedule 8 shows the ROE for the S&P 500 group for the  
17 period 1978-2014. This schedule also indicates the annual yields on 20-year U.S.  
18 Treasury bonds and the annual differentials (i.e. risk premiums) between the S&P 500  
19 and U.S. Treasury 20-year bonds. Based upon these returns, I conclude that the risk  
20 premium from this analysis is 6.85 percent.

21 I next considered the total returns (i.e. dividends/interest plus capital gains/losses)  
22 for the S&P 500 group as well as for long-term government bonds, as tabulated by Duff  
23 & Phelps (formerly Morningstar/Ibbotson Associates), using both arithmetic and  
24 geometric means. I considered the total returns for the entire 1926-2015 period, which  
25 are as follows:  
26  
27

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

|            | <u>S&amp;P 500</u> | <u>L-T Gov't Bonds</u> | <u>Risk Premium</u> |
|------------|--------------------|------------------------|---------------------|
| Arithmetic | 12.0%              | 6.0%                   | 6.0%                |
| Geometric  | 10.0%              | 5.6%                   | 4.4%                |

I conclude from this analysis that the expected risk premium is about 5.75 percent (i.e. average of all three risk premiums: 6.85 percent from Schedule 8; 6.0 percent arithmetic and 4.4 percent geometric from Duff & Phelps). I believe that a combination of arithmetic and geometric means is appropriate since investors have access to both types of means<sup>12</sup> and presumably, both types are reflected in investment decisions and thus, stock prices and the ROE.

**Q. What are your CAPM results?**

A. Schedule 9 shows my CAPM calculations. The results are:

|                        | <u>Mean</u> | <u>Median</u> |
|------------------------|-------------|---------------|
| Value Line Water Group | 5.9%        | 6.1%          |

**Q. WHAT IS YOUR CONCLUSION CONCERNING THE CAPM ROE?**

A. The CAPM results collectively indicate a ROE of 5.9 percent to 6.1 percent for the group of proxy utilities. I conclude that an appropriate CAPM ROE estimation for SWDE is 5.9 percent to 6.1 percent.

**X. CE ANALYSIS**

**Q. Please describe the basis of the CE methodology.**

A. The CE method is derived from the “corresponding risk” concept discussed in the *Bluefield* and *Hope* cases. This method is thus based upon the economic concept of

<sup>12</sup> For example, Value Line uses compound (i.e., geometric) growth rates in its projection. In addition, mutual funds report growth rates on a compound basis.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 opportunity cost. As previously noted, the ROE is an opportunity cost: the prospective  
2 return available to investors from alternative investments of similar risk.

3 The CE method is designed to measure the returns expected to be earned on the  
4 original cost book value of similar risk enterprises. Thus, it provides a direct measure of  
5 the fair return, since it translates into practice the competitive principle upon which  
6 regulation rests.

7 The CE method normally examines the experienced and/or projected return on  
8 book common equity. The logic for examining returns on book equity follows from the  
9 use of original cost rate base regulation for public utilities, which uses a utility's book  
10 common equity to determine the COC. This COC is, in turn, used as the fair rate of  
11 return which is then applied (multiplied) to the book value of rate base to establish the  
12 dollar level of capital costs to be recovered by the utility. This technique is thus  
13 consistent with the rate base-rate of return methodology used to set utility rates.

14  
15 **Q. How do you apply the CE methodology in your analysis of SWDE's ROE?**

16 A. I apply the CE methodology by examining realized ROEs for the group of proxy water  
17 companies, as well as unregulated companies, and evaluating investor acceptance of  
18 these returns by reference to the resulting market-to-book ratios ("M/B"). In this manner  
19 it is possible to assess the degree to which a given level of ROE equates to the required  
20 COC. It is generally recognized for utilities that M/Bs of greater than one (i.e. 100  
21 percent) reflect a situation where a company is able to attract new equity capital without  
22 dilution (i.e. above book value). As a result, one objective of a fair ROE is the  
23 maintenance of stock prices at or above book value. There is no regulatory obligation to  
24 set rates designed to maintain an M/B significantly above one.

25 I further note that my CE analysis is based upon market data (through the use of  
26 M/B) and is thus essentially a market test. As a result, my CE analysis is not subject to  
27 the criticisms occasionally made by some who maintain that past earned ROEs do not

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 represent the cost of capital. In addition, my CE analysis also uses prospective ROEs and  
2 thus is not backward looking.  
3

4 **Q. What time periods do you examine in your CE analysis?**

5 A. My CE analysis considers the experienced ROEs of the proxy group of utilities for the  
6 period 2002-2015 (i.e. the last fourteen years). The CE analysis requires that I examine a  
7 relatively long period of time in order to determine trends in earnings over at least a full  
8 business cycle. Further, in estimating a fair level of return for a future period, it is  
9 important to examine earnings over a diverse period of time in order to avoid any undue  
10 influence from unusual or abnormal conditions that may occur in a single year or shorter  
11 period. Therefore, in forming my judgment of the current cost of equity, I focused on  
12 two periods: 2009-2015 (the current business cycle) and 2002-2008 (the most recent  
13 business cycle). I have also considered projected ROEs for 2016, 2017 and 2019-2021.  
14

15 **Q. Please describe your CE analysis.**

16 A. Schedules 10 and 11 contain summaries of experienced ROEs for two groups of  
17 companies, while Schedule 12 presents a risk comparison of utilities versus unregulated  
18 firms.

19 Schedule 10 shows the ROEs and M/Bs for the group of proxy utilities. These  
20 can be summarized as follows:  
21  
22  
23  
24  
25  
26  
27

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

|                 | Value Line<br>Water Group |
|-----------------|---------------------------|
| Historic ROE    |                           |
| Mean            | 9.8-9.9%                  |
| Median          | 9.3-9.7%                  |
| Historic M/B    |                           |
| Mean            | 198-232%                  |
| Median          | 182-219%                  |
| Prospective ROE |                           |
| Mean            | 10.5-11.1%                |
| Median          | 10.5-10.8%                |

These results indicate that historic ROEs of 9.3 percent to 9.9 percent have been adequate to produce M/Bs of 182 percent to 232 percent for the group of utilities. Furthermore, projected ROEs for 2016, 2017 and 2019-2021 are within a range of 10.5 percent to 11.1 percent for the utility group. These relate to 2015 M/Bs of 200 percent or greater.

**Q. Do you also review the earnings of unregulated firms?**

A. Yes. As an alternative, I also examine the S&P's 500 Composite group. This is a well recognized group of firms that is widely utilized in the investment community and is indicative of the competitive sector of the economy. Schedule 11 presents the earned ROEs and M/Bs for the S&P 500 group over the past thirteen years (i.e., 2002-2014). As this schedule indicates, over the two business cycle periods, this group's average ROEs ranged from 12.4 percent to 13.6 percent, with average M/Bs ranging between 220 percent and 275 percent.

**Q. How can the above information be used to estimate SWDE's ROE?**

A. The recent ROE of the proxy utilities and S&P 500 groups can be viewed as an indication of the level of return realized and expected in the regulated and competitive sectors of the economy. In order to apply these returns to the ROE for the proxy utilities, however, it is necessary to compare the risk levels of the water utilities and the competitive companies.

1 I do this in Schedule 12, which compares several risk indicators for the S&P 500 group  
2 and the water utility group. The information in Schedule 12 indicates that the S&P 500  
3 group is more risky than the water utility proxy group.  
4

5 **Q. What ROE is indicated by your CE analysis?**

6 A. Based on recent ROEs and M/Bs, my CE analysis indicates that the ROE for the proxy  
7 utilities is no more than 9.0 percent to 10.0 percent (9.5 percent mid-point). Recent  
8 ROEs of 9.3 percent to 9.9 percent have resulted in M/B more than 180 percent.  
9 Prospective ROEs of 10.5 percent to 11.1 percent have been accompanied by M/B over  
10 200 percent. As a result, it is apparent that authorized returns below this level would  
11 continue to result in M/Bs of well above 100 percent. An ROE of 9.5 percent should thus  
12 result in an M/Bs well above 100 percent. As I indicated earlier, the fact that M/Bs  
13 substantially exceeds 100 percent indicates that historic and prospective ROEs of 9.5  
14 percent reflect earning levels that are well above the actual cost of equity for those  
15 regulated companies. I also note that a company whose stock sells above book value can  
16 attract capital in a way that enhances the book value of existing stockholders, thus  
17 creating a favorable environment for financial integrity. Finally, I note that my 9.0  
18 percent to 10.0 percent CE recommendation generally reflects most of the actual ROEs  
19 for the water proxy group. I have made no adjustments to these return levels to reflect  
20 the high M/B.  
21

22 **XI. RETURN ON EQUITY RECOMMENDATION**  
23

24 **Q. Please summarize the results of your three ROE analyses.**

25 A. My three ROE analyses produced the following:  
26  
27

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

|   |      |      |
|---|------|------|
| 1 | DCF  | 9.1% |
| 2 | CAPM | 6.0% |
| 3 | CE   | 9.5% |

4 These results indicate an overall broad range of 6.0 percent to 9.5 percent, which focuses  
5 on the respective individual model results. I recommend a ROE range of 9.1 percent to  
6 9.5 percent for SWDE. This range includes my DCF result (9.1 percent), and my CE  
7 result (9.5 percent). For the purposes of this proceeding, I recommend the average of  
8 these values, which is 9.3 percent.

9  
10 **Q. It appears that your CAPM results are less than your DCF and CE results. Does**  
11 **this imply that the CAPM results should not be considered in determining the ROE**  
12 **for SWDE?**

13 A. No. It is apparent that the CAPM results are less than the DCF and CE results. There are  
14 two reasons for the lower CAPM results. First, risk premiums are lower currently than  
15 was the case in prior years. This is the result of lower equity returns that have been  
16 experienced over the past several years. This is also reflective of a decline in investor  
17 expectations of equity returns and risk premiums. Second, the level of interest rates on  
18 U.S. Treasury bonds (i.e., the risk free rate) has been lower in recent years. This is  
19 partially the result of the actions of the Federal Reserve to stimulate the economy. This  
20 also impacts investor expectations of returns in a negative fashion. I note that, initially,  
21 investors may have believed that the decline in Treasury yields was a temporary factor  
22 that would soon be replaced by a rise in interest rates. However, this has not been the  
23 case as interest rates have remained low and continued to decline for the past five-plus  
24 years. As a result, it cannot be maintained that low interest rates (and low CAPM results)  
25 are temporary and do not reflect investor expectations. Consequently, the CAPM results  
26 should be considered as one factor in determining the cost of equity for SWDE.

**XII. TOTAL COST OF CAPITAL**

**Q. What is the total cost of capital for SWDE?**

A. Schedule 1 reflects the total cost of capital for SWDE using my proposed capital structure and embedded cost of debt, as well as my ROE recommendations. The resulting total cost of capital is a range of 7.28 percent to 7.49 percent. I recommend a 7.38 percent total cost of capital for SWDE.

**XIII. COMMENTS ON COMPANY TESTIMONY**

**Q. What cost of capital has SWDE requested in its application?**

A. The Company's filing requests a COC of 7.89 percent, which incorporates a ROE of 10.25 percent. The 10.25 percent requested ROE by SWDE is developed in the testimony of SWDE witness Pauline M. Ahern (who recommends a 10.40 percent ROE). Her methodologies and conclusions are as follows:

|  | Ahern Group of Eight<br>AUS Water Utility<br>Companies |
|--|--|
| DCF Model  | 8.51%  |
| Risk Premium Model   | 10.42%   |
| CAPM   | 9.93%  |
| Market Models Applied To Non-<br>Price Regulated Companies | 11.21%   |
| Indicated Median Cost of Equity                            | 10.10%   |
| Business Risk Adjustment                                   | 0.30%  |
| Indicated ROE  | 10.40%   |
| Recommended ROE  | 10.40%   |

**Q. Before commenting on Ms. Ahern's specific methodologies and recommendations, do you have any general comments and responses to her conclusions?**

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 A. Yes, I do. It is apparent that Ms. Ahern's conclusions and recommendations are well  
2 beyond the mainstream of authorized ROE's for water utilities throughout the U.S. in  
3 recent years.

4  
5 **Q. Do you have any specific disagreements with any or all of Ms. Ahern's**  
6 **methodologies and recommendations?**

7 A. Yes. I have disagreements with several of her cost of equity methodologies and  
8 conclusions, as well as her proposed "business risk adjustment" for SWDE.

9  
10 **Q. Please begin with her DCF model and conclusions.**

11 A. Ms. Ahern's 8.51 percent DCF conclusion is shown on her MFR 6.44, Workpaper PMA-  
12 4. This is similar to my DCF results.

13  
14 **Q. Please describe Ms. Ahern's risk premium approach and conclusions.**

15 A. Ms. Ahern performs two types of risk premium analyses. First, she employs a Predictive  
16 Risk Premium Model™ ("PRPM™") which produces a 10.91 percent ROE. Second, she  
17 develops her Adjusted Total Market Approach risk premium methodology to arrive a risk  
18 premium ROE of 9.93 percent. Her risk premium method conclusion and  
19 recommendation is 10.42 percent (Workpaper PMA-5), which gives equal weighting to  
20 the PRPM™ approach and the Adjusted Total Market Approach.

21  
22 **Q. What is Ms. Ahern's first risk premium methodology?**

23 A. Ms. Ahern first performs a relatively new type of risk premium approach, which is her  
24 PRPM™ approach. This approach is relatively new and untried. Significantly, the result  
25 of this methodology is a 10.91 percent ROE conclusion, which exceeds (i.e., nearly 100  
26 basis points) the results of her Adjusted Total Market Approach risk premium approach.  
27 I again note that, not only does her PRPM™ approach produce a much higher cost of

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

equity result; the approach is also a component in her Adjusted Total Market Approach methodologies and has the effect of raising the results of this methodology as well.

**Q. You state that the PRPM™ approach is new and untried. Are you aware of any regulatory agency that has endorsed or accepted this methodology?**

A. No, I am not. I also observe that Ms. Ahern, who is one of the developers and principal proponents of this methodology, cannot identify any U.S. regulatory commission that has accepted it.<sup>13</sup>

**Q. Do you agree with her Adjusted Total Market Approach methodology and conclusions?**

A. No, I do not. Ms. Ahern's Adjusted Total Market Return approach incorporates a risk premium of 4.62 percent, derived as follows:

|   |               |
|---|---------------|
| Calculated equity risk premium based              |               |
| On total market using beta approach:              |               |
| Ibbotson Equity Risk Premium                      | 5.89%         |
| Ibbotson Equity Risk Premium based on PRPM        | 7.06%         |
| Equity Risk Premium Based on Value Line           | 7.60%         |
| Equity Risk Premium Based on S&P 500 Cos          | <u>8.68%</u>  |
| Average   | 7.31%         |
| Adjusted Beta                                     | 0.72          |
| Forecasted Risk Premium                           | <b>5.26%</b>  |
|   |               |
| Arithmetic mean Holding Period Returns on S&P 500 | 10.69%        |
| Arithmetic mean Yield on A rated utility bonds    | <u>-6.67%</u> |
| Historic Equity Risk Premium                      | 4.02%         |
| Forecasted Equity risk Premium based on PRPM      | 4.01%         |
| Forecasted Equity Risk Premium based on projected |               |
| Total return on S&P Utilities Index               | <u>3.89%</u>  |
| Average of Historical and PRPM Equity Risk Premia | <b>3.97%</b>  |
|   |               |
| Average Equity Risk Premium                       | <b>4.62%</b>  |

<sup>13</sup> Response to DPA-3.4.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1       Of the seven risk premia shown above, two are based on the PRPM<sup>TM</sup> approach, which I  
2       have shown above to be improper. In addition, the 8.68 percent risk premium based on  
3       the S&P 500 companies is clearly an outlier, and is based upon an assumed total return of  
4       13.47 percent for this index (well above its historical returns of 12 percent or less). The  
5       remaining four risk premium measures form a range of 3.89 percent to 7.06 percent (5.35  
6       percent average) which is similar to my risk premium indicators in my CAPM analyses.

7       Furthermore, there are several problems with her methodologies. Her use of total  
8       stock returns over the 1926-2014 period, in connection with bond yields over the same  
9       period, seems to imply that investors in 2016 expect such relationships to be the same.  
10      There is no demonstration that current investors expect such relationships to exist at the  
11      current time. Her methodology is also a mismatch since it compares holding period  
12      returns (i.e., capital gains/losses plus income) with yields on bonds (i.e., only income  
13      return). In addition, the 1926-2014 period was heavily influenced by the Great  
14      Depression, World War II, the high inflation/interest rate environment of the  
15      1970s/1980s, etc. Such factors are not prevalent currently and have the effect of inflating  
16      risk premiums over those expected by investors. I believe Ms. Ahern's analyses over-  
17      state the required risk premiums at the present time. In addition, I find it inconsistent on  
18      her part to defend use of historic data going back to 1926 in her risk premium and CAPM  
19      analyses, and to then ignore historic data in her DCF analyses. I do not see how an  
20      investor would place equal weight between returns in 1926 and 2015 in one type of  
21      analysis (i.e., risk premium and CAPM) and then give no weight whatsoever to recent  
22      (i.e., 5 years) experience in DCF analysis. I also disagree with Ms. Ahern's use of  
23      projected equity returns, which are largely dependent on assumed stock market values.  
24      This is speculative.

25  
26   **Q.    You indicate that Ms. Ahern's risk premium and CAPM analyses use forecasted**  
27   **yields on U.S. Treasury and Utility Bonds. Why do you disagree with this?**

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 A. It is proper to use the current yield, rather than a projected yield, as the risk-free rate in a  
2 risk premium and CAPM context. This is the case since the current yield is known and  
3 measurable and reflects investors' collective assessment of all relevant capital market  
4 conditions. Prospective interest rates, in contrast, are not measurable and not achievable.  
5 For example, if the current yield on 20-year U.S. Treasury Bonds is 2.0 percent, this  
6 reflects the rate that investors can actually receive on their investment. Investors cannot  
7 receive a prospective yield on their investments since such a yield is not actual but rather  
8 speculative.

9 Use of the current yield in a DCF context is similar to using the current risk-free  
10 rate in a CAPM context. Analysts do not use prospective stock prices as the basis for the  
11 dividend yield in a DCF analysis, as use of prospective stock prices is speculative. Use  
12 of current stock prices is appropriate as this is consistent with the efficient market  
13 hypothesis that Ms. Ahern has long cited in her testimonies. Likewise, current levels of  
14 interest rates reflect all current information (i.e., the efficient market hypothesis) and  
15 should be used as the risk-free rate in the CAPM.

16  
17 **Q. Please describe Ms. Ahern's CAPM analyses.**

18 A. Ms. Ahern performs two sets of CAPM analyses. Her first CAPM is a "traditional"  
19 CAPM, where she concludes that 9.62-9.64 percent is the CAPM cost. This uses a risk  
20 free rate of 3.70 percent (projected yield on 30-year U.S. Treasury bonds), Value Line  
21 betas and a risk premium of 8.31 percent. I note that current 30-year Treasury bonds  
22 currently yield well below 3.70 percent, which indicates that her prospective yield is  
23 excessive.

24 I also disagree with the 8.31 percent market risk premium Ms. Ahern employs in  
25 her CAPM analyses. This market risk premium is developed in a similar fashion to those  
26 in her risk premium analyses. For the same reasons cited above, Ms. Ahern's risk  
27 premium values are over-stated.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

1 Ms. Ahern also performs an “empirical” CAPM analysis, wherein she assigns 75  
2 percent weight to actual betas for the proxy group of water utilities and a 25 percent  
3 weight to an assumed beta of 1.0 (i.e., the market beta). I disagree with this empirical  
4 CAPM, since it arbitrarily ignores the actual betas of the proxy utilities and, instead,  
5 assigns hypothetical betas to them.

6  
7 **Q. What is your response to Ms. Ahern’s use of a “Non-Price Regulated Proxy Group”**  
8 **in her ROE analyses?**

9 A. I disagree with her use of unregulated firms as a proxy group for SWDE. It is not proper  
10 to use non-regulated firms in the manner Ms. Ahern proposes. This is the case since  
11 unregulated enterprises face different risk and operational characteristics than do utilities.

12  
13 **Q. Do you agree with the proposition that SWDE should be entitled to a size or**  
14 **business risk adjustment?**

15 A. No, I do not. The SWDE’s ratepayers should not be charged water rates which reflect an  
16 incremental return to reflect the size of the Company. Such an increment is not justified  
17 and not appropriate.

18  
19 **Q. Is it proper to compare the size of the Companies’ to the water proxy companies**  
20 **and make risk comparisons based upon the size differentials between them?**

21 A. No, it is not proper. Most of the proxy water utilities have multiple subsidiaries that  
22 operate in different jurisdictions. Following Ms. Ahern’s reasoning, each of the  
23 subsidiaries of the proxy water utilities should be considered as more risky than the proxy  
24 group since, by definition, they would have to be smaller. This reasoning is flawed, since  
25 these individual water company subsidiaries do not raise their equity capital directly from  
26 investors, but rather do so as a consolidated entity.

1 **Q. Are there other reasons why a size adjustment is improper?**

2 A. Yes. There are other compelling reasons why a small size adjustment is not proper for  
3 regulated utilities. Ms. Ahern's proposed size adjustment is based upon her reference to  
4 the Duff & Phelps (formerly Morningstar/Ibbotson) studies. However, the small size  
5 adjustment in these studies is based on the analysis of all stocks, the majority of which  
6 are unregulated and include industries that are much more risky than utilities. While it  
7 may or may not be true that on an overall market basis, smaller publicly-traded firms  
8 exhibit more risk than larger firms, these smaller companies stocks tend to be engaged in  
9 riskier businesses as a whole than do larger businesses. Such is not the case for regulated  
10 utilities.

11 Indeed, an academic study conducted by Professor Annie Wong found that:

12 **“utility and industrial stocks do not share the same**  
13 **characteristics.** First, given firm size, utility stocks are  
14 consistently less risky than industrial stocks. Second, industrial  
15 bets tend to decrease with firm size but utility betas do not. These  
16 findings may be attributed to the fact that all public utilities operate  
17 in an environment with regional monopolistic power than regulated  
18 financial structure. As a result, the business and financial risks are  
19 very similar among the utilities regardless of their sizes.  
20 Therefore, utility betas would not necessarily be expected to be  
21 related to firm size.

22 . . .

23 This implies that although the price phenomenon has been strongly  
24 documented for the industrials, the **findings suggest that there is**  
25 **no need to adjust for the firm size in utility rate regulation.**<sup>14</sup>  
26 [Emphasis Added.]  
27

28 **Q. Can you provide any evidence that “size” or “business risk” adjustments are not**  
29 **generally recognized as risk factors in regulatory proceedings such as this one?**

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<sup>14</sup> Wong, Annie, “Utility Stocks And The Size Effect: An Empirical Analysis,” Journal of the Midwest Finance Association, 1993, pp. 95-101.

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

A. Yes, I can. The following table reflects the average size (as measured by net plant) and currently authorized returns on equity or various types of regulated utilities:

| Industry     | Average<br>Net Plant<br>(000) | Average<br>Authorized<br>ROE <sup>15</sup> |
|--------------|-------------------------------|--|
| Electric     | \$18,285                      | 10.42%                                     |
| Combination  |                               |  |
| Electric-Gas | \$17,856                      | 10.30%                                     |
| Natural Gas  | \$3,519                       | 10.28%                                     |
| Water        | \$2,604                       | 9.65%                                      |

Source: AUS Utility Reports, January 2016.

As shown here the smallest utilities (i.e., water utilities) have the lowest authorized ROEs.

**Q. Is there any evidence that small water companies are not perceived as more risky than larger water utilities?**

A. Yes, there is. Schedule 13 indicates that this is the case. As this schedule indicates, there are no apparent risk-indicator differentials as one looks at the water proxy group members sorted according to size.

**Q. Can you provide any direct comparisons of electric utilities that demonstrates that smaller utilities are not more risky than larger ones?**

A. Yes. Implicit in Ms. Ahern's proposal is an assumption that any perceived small size risk adjustment for unregulated companies (i.e., source of information cited in Duff & Phelps and Morningstar/Ibbotson sources Ms. Ahern relies on for small size adjustment) applies to regulated public utilities. Schedule 14 demonstrates objectively that this is not the

SUEZ WATER DELAWARE INC.  
DOCKET NO. 16-0163  
DIRECT TESTIMONY OF DAVID C. PARCELL

case. As this exhibit shows, there is no significant difference, and even more to the point that there is no discernible pattern of increase, among the risk indicators of publicly-traded electric utilities of different sizes. The table below summarizes the information contained in this schedule:

| Cap Size    | Safety | Beta | Financial Strength | S&P Rank | S&P Rating | Moody's Rating |
|-------------|--------|------|--------------------|----------|------------|----------------|
| Under \$2 B | 2.0    | .74  | B++                | B+       | A-/BBB+    | A3             |
| \$2 - \$5 B | 2.3    | .78  | B++                | A-/B+    | BBB+       | A3/Baa1        |
| \$5-\$10 B  | 1.8    | .78  | A/B++              | A-/B+    | BBB+       | A3             |
| \$10-\$20 B | 2.1    | .72  | B++                | A-/B+    | BBB+       | A3/Baa1        |
| \$20 B Plus | 2.0    | .68  | A                  | B+       | A-/BBB+    | A3             |

The safety rank, beta values, financial strength and S&P stock ranking are about the same for all sizes of electric utilities. These risk indicators do not reflect any risk differential as the size of the electric utilities decrease from large to small. To the contrary, this data indicates that regulated monopoly utility providers have approximately the same risk regardless of size. As a result, the logic Ms. Ahern uses to justify her proposed small size adjustment is not justified.

**Q. Does this conclude your direct testimony?**

**A.** Yes, it does.

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<sup>15</sup> Note that "Authorized" ROEs do not necessarily indicate "recently authorized" ROEs, since some ROEs were established in prior periods. Moreover, AUS reports each utility's most recent explicitly-authorized ROE even where that result is aged and has been superseded by a more recent "black box" rate settlement.